

**IN THE CLAIMS:**

1       1. (Original) In an intermediate network device having a plurality of ports for forwarding  
2       network messages within a bridged network, a method for efficiently transitioning the  
3       ports among a plurality of spanning tree protocol (STP) states, the method comprising the  
4       steps of:

5             executing the STP at the intermediate network device so as to elect a root of the  
6       bridged network and to assign one of the device's ports to a Root Port Role, one or more  
7       of the device's ports to an Alternate Port Role, and one or more of the device's ports to a  
8       Designated Port Role;

9             transitioning the ports assigned to the Root Port Role and the Designated Port  
10      Role to a forwarding STP state;

11             transitioning the one or more ports assigned to the Alternate Port Role to a dis-  
12      carding STP state;

13             receiving a bridge protocol data unit (BPDU) message, the BPDU message having  
14      a proposal flag that is asserted; and

15             if the BPDU message was received on the port assigned the Root Port Role, leav-  
16      ing the one or more ports assigned to the Designated Port Role in the forwarding STP  
17      state, provided that the one or more ports assigned to the Alternate Port Role are in the  
18      discarding STP state.

1       2. (Original) The method of claim 1 wherein the STP substantially complies with the In-  
2       stitute of Electrical and Electronics Engineers (IEEE) 802.1w Rapid Spanning Tree Pro-  
3       tocol (RSTP) specification standard.

1       3. (Original) The method of claim 1 wherein, in response to receiving the BPDU message  
2       with the proposal flag asserted, the device does not issue one or more BPDU messages  
3       from its ports assigned to the Designated Port Role.

1    4. (Original) The method of claim 3 further comprising the step of issuing a BPDU mes-  
2    sage from the port assigned to the Root Port Role, the issued BPDU message having an  
3    agreement flag that is asserted.

1    5. (Original) The method of claim 1 further comprising the steps of:  
2         transitioning one or more ports assigned to the Designated Port Role to a discarding  
3         STP state, if the BPDU message with the asserted proposal flag is received on a port  
4         other than the port assigned to the Root Port Role; and  
5             upon transitioning the one or more ports assigned to the Designated Port Role to  
6         the discarding state, issuing a BPDU message from the port on which the BPDU message  
7         with the asserted proposal flag was received, the issued BPDU message having an  
8         agreement flag that is asserted.

1    6. (Original) The method of claim 1 further comprising the step of, if the one or more  
2    ports assigned the Alternate Port Role is not in the discarding STP state, placing such  
3    ports in the discarding STP state.

1    7. (Original) An intermediate network device configured to forward network messages  
2    within a bridged network, the device having a plurality of ports for connecting the device  
3    to one or more network entities, the intermediate network device comprising:  
4         a port role selection state machine configured to assign roles to the ports;  
5         a port transition state machine configured to transition the ports among a plurality  
6         of spanning tree protocol (STP) states depending on the assigned roles; and  
7         a sync manager for use in executing the STP, wherein,  
8             the port role selection state machine and the port transition state machine  
9         cooperate so as to assign one of the device's ports to a Root Port Role, to assign  
10        one or more of the device's ports to an Alternate Port Role, and to assign one or  
11        more of the device's ports to a Designated Port Role,

12                   the port role selection state machine and the port transition state machine  
13                   further cooperating to transition the ports assigned to the Root Port Role and the  
14                   Designated Port Role to a forwarding STP state and to transition the one or more  
15                   ports assigned to the Alternate port role to a discarding STP state, and

16                   in response to receiving a bridge protocol data unit (BPDU) message hav-  
17                   ing a proposal flag that is asserted, the sync manager cooperates with the port  
18                   transition state machine to leave one or more of the ports assigned to the Desig-  
19                   nated Port Role in the forwarding STP state, provided that the BPDU message  
20                   was received on the port assigned the Root Port Role and further provided that the  
21                   one or more ports assigned to the Alternate Port Role are in a discarding STP  
22                   state.

1       8. (Original) The intermediate network device of claim 7 further comprising a forwarding  
2       engine configured to forward network messages received on a first port to one or more  
3       second ports.

1       9. (Original) The intermediate network device of claim 7 wherein the STP executed by  
2       the device substantially complies with the Institute of Electrical and Electronics Engi-  
3       neers (IEEE) 802.1w Rapid Spanning Tree Protocol (RSTP) specification standard.

1       10. (Original) The intermediate network device of claim 7 further comprising a BPDU  
2       message generator, wherein the sync manager cooperates with the BPDU message gen-  
3       erator to have a BPDU message issued from the port assigned to the Root Port Role, the  
4       issued BPDU message having an agreement flag that is asserted.

1       11. (Original) In an intermediate network device having a plurality of ports for forward-  
2       ing network messages within a bridged network, a method for efficiently transitioning the  
3       ports among a plurality of spanning tree protocol (STP) states, the method comprising the  
4       steps of:

5           executing the STP at the intermediate network device so as to elect a root of the  
6       bridged network, to designate a port of the device to be the current root port and to assign  
7       one or more of the device's ports to a Designated Port Role;

8           transitioning the ports assigned to the Designated Port Role to a forwarding STP  
9       state;

10          receiving a bridge protocol data unit (BPDU) message, the BPDU message having  
11       a proposal flag that is asserted; and

12          if the proposal-BPDU message was received on the current root port, leaving the  
13       one or more ports assigned to the Designated Port Role in the forwarding STP state.

1       12. (Original) The method of claim 11 further comprising the step of, if the proposal-  
2       BPDU message was received on a newly elected root port, identifying the current root  
3       port as a previous root port, transitioning the previous root port to a blocking STP state  
4       and leaving the one or more ports assigned to the Designated Port Role in the forwarding  
5       STP state.

1       13. (Original) The method of claim 12 further comprising the step of issuing a BPDU  
2       message from the port on which the proposal-BPDU message was received, the issued  
3       BPDU message having an agreement flag that is asserted.

Please add new claims 14 *et al.*

- 1        14. (New) A method for configuring a router, comprising:
  - 2                executing a spanning tree protocol (STP) on the router, the STP assigning a Root
  - 3                Port Role to a first port of the router;
  - 4                receiving a bridge protocol data unit (BPDU) message, the BPDU message having
  - 5                a proposal flag that is asserted;
    - 6                if the BPDU message is received on the port assigned the Root Port Role, not
    - 7                changing the state of any of the ports in the router; and
    - 8                if the BPDU message is received by a second port, not assigned the Root Port
    - 9                Role, then blocking the first port and assigning the second port as the Root Port Role.
- 1        15. (New) The method of claim 14, further comprising:
  - 2                keeping other ports assigned as a Designated Port Role in the Designated Port
  - 3                Role.
- 1        16. (New) The method of claim 14, further comprising:
  - 2                sending an agreement BPDU message by the second port set as the new Root Port
  - 3                Role.
- 1        17. (New) The method of claim 14, further comprising:
  - 2                if the second port is originally assigned as an Alternate Port Role, then transitioning other ports assigned to a Designated Port Role to the Alternate Port Role.

- 1    18. (New) An apparatus for configuring a router, comprising:
  - 2                means for executing a spanning tree protocol (STP) on the router, the STP assigning a Root Port Role to a first port of the router;
  - 4                means for receiving a bridge protocol data unit (BPDU) message, the BPDU message having a proposal flag that is asserted;
    - 6                if the BPDU message is received on the port assigned the Root Port Role, means
    - 7                for not changing the state of any of the ports in the router; and
    - 8                if the BPDU message is received by a second port, not assigned the Root Port
    - 9                Role, then means for blocking the first port and assigning the second port as the Root
    - 10          Port Role.
- 1    19. (New) The apparatus of claim 18, further comprising:
  - 2                means for keeping other ports assigned as a Designated Port Role in the Designated Port Role.
- 1    20. (New) The apparatus of claim 18, further comprising:
  - 2                means for sending an agreement BPDU message by the second port set as the new
  - 3                Root Port Role.
- 1    21. (New) The apparatus of claim 18, further comprising:

2 if the second port is originally assigned as an Alternate Port Role, then means for  
3 transitioning other ports assigned to a Designated Port Role to the Alternate Port Role.

1 22. (New) A router, comprising:

2 the router configured to execute a spanning tree protocol (STP) on the router, the  
3 STP assigning a Root Port Role to a first port of the router;

4 a bridge protocol data unit (BPDU) message received by the router, the BPDU  
5 message having a proposal flag that is asserted;

6 if the BPDU message is received on the port assigned the Root Port Role, the first  
7 port remains set in the Root Port Role and all other ports of the router do not change  
8 states; and

9 if the BPDU message is received by a second port, not assigned the Root Port  
10 Role, then the first port is blocked and the second port is assigned as the Root Port Role.

1 23. (New) The router of claim 22, further comprising:

2 a port assigned in a Designated Port Role remains in the Designated Port Role.

1 24. (New) The router of claim 22, further comprising:

2 the second port sends an agreement BPDU message when the second port is set as  
3 the new Root Port Role.

1 25. (New) The router of claim 22, further comprising:

2 if the second port is originally assigned as an Alternate Port Role, then other ports  
3 originally assigned to a Designated Port Role are transitioned to the Alternate Port Role.

1 26. (New) A computer readable media, comprising:  
2 said computer readable media having instruction written thereon for execution on  
3 a processor for the practice of configuring a router comprising,  
4 executing a spanning tree protocol (STP) on the router, the STP assigning a Root  
5 Port Role to a first port of the router;  
6 receiving a bridge protocol data unit (BPDU) message, the BPDU message having  
7 a proposal flag that is asserted;  
8 if the BPDU message is received on the port assigned the Root Port Role, not  
9 changing the state of any of the ports in the router; and  
10 if the BPDU message is received by a second port, not assigned the Root Port  
11 Role, then blocking the first port and assigning the second port as the Root Port Role.

1 27. (New) Electromagnetic signals propagating on a computer network, comprising:  
2 said electromagnetic signals carrying instructions for execution on a proc-  
3 essor for the practice of configuring a router comprising,  
4 executing a spanning tree protocol (STP) on the router, the STP assigning a Root  
5 Port Role to a first port of the router;  
6 receiving a bridge protocol data unit (BPDU) message, the BPDU message having  
7 a proposal flag that is asserted;

- 8        if the BPDU message is received on the port assigned the Root Port Role, not
- 9        changing the state of any of the ports in the router; and
- 10      if the BPDU message is received by a second port, not assigned the Root Port
- 11      Role, then blocking the first port and assigning the second port as the Root Port Role.